EMCrit 239 – Vent Alarms = Code Blue

Scott Weingart, MD FCCM

Vent Alarms should be Regarded as Code Blue

If you cannot instill this into your culture, patients will die

If they are crashing, do DOPES

ETCO2 on any Vented Pt

This is what the real alarm should be

High (Peak) Pressure

HIGH PEAK PRESSURE
Volume Control Ventilation

42A
CRISIS PROTOCOLS
ONE TWO
CRISIS PROCEDURES

Atif Farooqi

1. If SpO_2 low or falling, refer to *Crashing on Ventilator* [11].
2. Check for capnograph waveform and kinking of endotracheal tube or circuit.
3. Test the tube patency by passing a suction catheter and if it's difficult, consider bronchoscopic assessment or tube exchange.
4. Change tidal volume (TV) to ≤ 8 mL/kg predicted body weight.
5. Increase the ventilator *Peak Pressure Alarm Limit* until entire set volume is delivered without triggering.
6. Perform inspiratory hold on ventilator to assess plateau pressure.

If peak pressure and plateau pressure difference < 5 cm H_2O

7. Rule out dynamic hyperinflation by lowering the respiratory rate or disconnecting the ventilator.
8. If no dynamic hyperinflation, perform ultrasound or get CXR to exclude pneumothorax and main-stem tube position.
9. Consider atelectasis, pneumonia, mucus plugging or ARDS.
10. Try to reduce TV until the plateau pressure < 30 cm H_2O.

If peak pressure and plateau pressure difference > 5 cm H_2O

11. Auscultate to assess for obstructive airway disease and use bronchodilators if indicated.
12. Check each piece of ventilator circuit for obstruction.
13. Consider leaving peak pressure limit as high as necessary to deliver breaths if plateau pressure remains < 30 cm H_2O.

from the Resus Crisis Manual

Dyssynchrony

Peak Only

- Check the circuit
  - fluid pooling in circuit
  - fluid pooling in filter
  - kinking of circuit
- Tube too small or biofilmed
- Bronchospasm
- **Biting on ETT**
-

Peak & Plat High

- Tube in Mainstem
- Pneumothorax
- Bad Lungs >> Turn down the Vt
- Abd Compartment

Low Peak Pressure

- **Disconnect**

- ETT Cuff Deflated
- Pt effort

Low Ve/Vt

- **Cuff Issues** (See EMCrit Wee)
- Bronchopleural Fistula

Low O2 Alarm

- Not hooked Up
- Gases Messed Up
- Sensor Messed up

What to Do with Continued Alarms Despite Sedation, Equipment Check, Suctioning

- Consider Bronchoscopic Assessment
- If Patient begins to crash, consider tube exchange if bronch not available

Breakdown on Alarm Types

Article on Vent Alarm Stats [1]

Type of alarm, %	
Apnea	1.7
High inspiratory pressure	34.2
High minute volume	4.0
High respiratory rate	17.8
High tidal volume	3.0
Low expired mandatory tidal volume	12.9
Low expired spontaneous tidal volume	8.6
Low minute volume	9.3
Patient disconnect	3.8
Other[d]	4.9

See More

High-Peak on ALIEM

1.

Cvach M, Stokes J, Manzoor S, et al. Ventilator Alarms in Intensive Care Units: Frequency, Duration, Priority, and Relationship to Ventilator Parameters. *Anesth Analg*. September 2018. [PubMed]

Additional New Information

More on EMCrit

- EMCrit Lecture – Dominating the Vent: Part I
- EMCrit Lecture – Dominating the Vent: Part II

Additional Resources

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